

In the claims:

1. (Currently Amended) A substrate for the controlled wetting of predetermined wetting sites with small fluid volumes, ~~having~~  
comprising:

a support plate having a horizontal main surface for wetting with a fluid at predetermined wetting sites, ~~and~~  
; and

~~applied to the support plate,~~ a flat protective layer  
applied to the support plate that separates the main surface from the surroundings,

~~said the protective layer comprising exhibiting, extending to the main surface of the support plate,~~ vertical recesses extending to the main surface of the support plate that define the predetermined wetting sites on the support plate, and

~~including, leading to the vertical recesses,~~ one or more supply channels leading to the vertical recesses for supplying the wetting fluid to the predetermined wetting sites, said supply channels having reduced thickness in the flat protective layer, ~~for supplying the wetting fluid to the predetermined wetting sites.~~

2. (Original) The substrate according to claim 1, characterized in that the vertical recesses are disposed in the supply channel or supply channels.

3. (Currently Amended) The substrate according to claim 1 ~~or 2,~~ characterized in that each vertical recess lies in ~~exactly~~ one supply channel.

4. (Currently Amended) The substrate according to claim 1 ~~or 2~~, characterized in that each vertical recess lies at the intersection point of multiple, ~~preferably of exactly two~~ supply channels.

5. canceled.

6. (Original) The substrate according to one of the preceding claims, characterized in that the vertical recesses or groups of recesses are disposed in the form of an  $n \times m$  matrix having  $n$  rows and  $m$  columns,  $n$  and  $m$  being greater than or equal to 2, and  $n$  and  $m$  each preferably lying between 10 and 1000.

7. (currently amended) The substrate according to claim 6, characterized in that the number  $n$  of rows and the number  $m$  of columns are identical, ~~and/or that the lateral spacings between adjacent recesses or groups of recesses are identical in the rows and columns.~~

8. (Currently Amended) The substrate according to claim 6 ~~or 7~~, characterized in that the  $m$  recesses or groups of recesses in one row are ~~each~~ disposed in one of  $n$  parallel row supply channels.

9. (Original) The substrate according to claim 8, characterized in that the  $n$  recesses or groups of recesses in one column are each disposed in one of  $m$  parallel column supply channels, so that each recess lies at the intersection point of two supply channels.

10. (Original) The substrate according to claim 9, characterized in that the row supply channels and the column supply channels exhibit an identical cross-sectional shape.

11. (Currently Amended) The substrate according to claim 6 ~~or 7~~ characterized in that each one  $n' \times m'$  sub-matrix of recesses or groups of recesses is disposed in one meander-shaped supply channel, wherein  $n = k_n * n'$  and  $m = k_m * m'$ , with integers  $k_n$  and  $k_m$  being greater than or equal to 1.

12. canceled.

13. canceled.

14. canceled.

15. (Currently Amended) The substrate according to ~~one of the preceding claims~~, claim 1 characterized in that the supply channels run substantially parallel to the main surface of the support plate.

16. (Currently Amended) The substrate according to ~~one of the preceding claims~~, claim 1 characterized in that the supply channels exhibit a rectangular or trapezoidal cross section.

17. canceled.

18. canceled.

19. (Currently Amended) The substrate according to ~~one of the preceding claims~~, ~~characterized in that~~ claim 1 wherein the vertical recesses exhibit a substantially rectangular, elliptical or circular cross section.

20. (Currently Amended) The substrate according to ~~one of the preceding claims~~, ~~characterized in that~~ claim 1 wherein the protective layer consists of a material that physisorbs on the support plate main surface to be wetted, or chemisorbs on the support plate main surface to be wetted, or binds to it the

support plate main surface to be wetted ~~covalently, coordinatively or by complex formation.~~

21. (Currently Amended) The substrate according to ~~one of the preceding claims, characterized in that~~ claim 1 wherein in that the protective layer is formed by a positive or negative photoresist, a solder resist or an organic polymer, especially cellulose, dextran or collagen.

22. (Currently Amended) The substrate according to ~~one of the preceding claims, characterized in that~~ claim 1 wherein the support plate ~~exhibits~~ comprises a base plate selected from the group consisting of plastic, metal, semiconductor, glass, composite or a porous material, ~~or a combination of these materials, wherein the support plate in the case of a non-conductive base plate preferably being comprises provided with a conductive layer, especially consisting of silicon, platinum or gold, which then forms the support plate main surface to be wetted.~~

23. (Currently Amended) The substrate according to ~~one of the preceding claims, characterized in that~~ claim 1 wherein the predetermined wetting sites are functionalized with specific probe molecules, ~~especially in that, at the predetermined wetting sites, probe molecules are physisorbed or chemisorbed on the support plate main surface, or are bound to it covalently, coordinatively or by complex formation.~~

24. (Original) The substrate according to claim 23, characterized in that the predetermined wetting sites are functionalized with nucleic acid oligomers that are modified with one or more reactive groups.

25. canceled.

26. canceled.

27. (Currently Amended) The substrate according to ~~one of the preceding claims, characterized in that~~ claim 1 wherein the substrate is covered with a cover plate that closes the supply channels in the up direction to form flow chambers.

28 – 44 canceled.

45. (Currently Amended) A substrate covering for a substrate according to one of ~~claims 1 to 27~~ claim 1 having a covering support plate having a plurality of protruding barrier elements whose shape and size are matched with the shape and size of the supply channels of the substrate to close the supply channels in sub-regions.

46. (Currently Amended) The substrate covering according to claim 45 ~~for a substrate according to claim 10, characterized in that~~ wherein the barrier elements are disposed on the covering support plate such that, after the joining of the substrate covering with the substrate, ~~they~~ the barrier elements close ~~only~~ the row supply channels or ~~only~~ the column supply channels.

47. (Canceled)

48. (Canceled)

49. (Canceled)

50. (Currently Amended) A method for manufacturing a substrate for the controlled wetting of predetermined wetting sites with small fluid volumes, ~~especially according to one of claims 1 to 27,~~ comprising the steps:

providing a support plate having a horizontal main surface $\tau_i$

applying to the support plate a flat protective layer that separates the main surface from the surroundings $\tau_i$

patterning the protective layer to create one or more supply channels having a reduced protective layer thickness $\tau_i$  and

creating in the supply channel or supply channels vertical recesses that extend to the main surface of the support plate and define the predetermined wetting sites on the main surface of the support plate.

51. canceled.

52. (Currently Amended) The method according to claim 50 ~~or 51~~, ~~characterized in that as~~ wherein the protective layer $\tau_i$  is a solder resist ~~is~~ applied with a curtain coating method.

53. (Currently Amended) The method according to ~~one of claims 50 to 52, characterized in that~~ claim 50 wherein the recesses, ~~and/or~~ the supply channels or the depression are created by means of laser ablation, especially by irradiation of sub-regions of the protective layer with continuous or pulsed laser radiation of a predetermined wavelength, preferably in the ultraviolet spectral range.

54 - 58 canceled.